



**PERT**  
**DIRECT AUTHORIZATION VENDOR'S**  
**GUIDE TO THE TECHNICAL TOOLKIT**

## Document Revision History

Date	Document Version	Document Revision Description
01/26/09	1.0	Initial Draft
07/28/09	1.0	Revised for Initial Draft of DAVs Guide
10/20/09	2.0	Updated Sec 3.1 to include new documents included in the Toolkit... DA Deduction Validation (2 <sup>nd</sup> paragraph) and Deduction Register Report Specifications doc (3 <sup>rd</sup> paragraph).

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# 1. INTRODUCTION

The Technical Toolkit is intended to provide Direct Authorization Vendors (DAVs) who are developing a solution to utilize File Upload or File Transfer Protocol (FTP) for deductions via my|CalPERS.

## 1.1. Objectives

The objectives of this Technical Toolkit are:

- Identify the elements included in the toolkit
- Explain the purpose of the elements included in the toolkit
- Define the relationships between the elements of the toolkit
- Provide developers with the specifications for the data elements and file formats
- Offer references to Uniform Resource Locators (URLs) for Microsoft and other sites where XML, XSD and related information can be found

## 1.2. Document Scope

The Technical Toolkit covers the following scope:

- Instructions on how to download and extract the contents of the Technical Toolkit
- Documentation on the Data Elements included in the Deduction Submission file (to CalPERS)
- Documentation on the Data Elements included in the Deduction Response file (from CalPERS) for FTP reporters
- Documentation on the Data Elements included in the Deduction Register file (from CalPERS)
- Schema definitions (XSD) for the Deduction Submission, Deduction Response, Deduction Register, SOAP envelope and Common Utilities
- Sample xml files for the Deduction Submission, Deduction Response and Deduction Register files
- Information on Technical Support

### 1.3. Glossary

**Data Element Descriptions**— A table identifying the list of data elements included in a particular reporting file submitted by a Direct Authorization Vendor. The Data Element Description provides the name of the data element, whether it is required, conditional or optional to be included in the file, the level of the hierarchy within the file where the data element fits, the type of data and any valid values or particular format that needs to be used when reporting the data. **IMPORTANT:** The Data Element Definitions DO NOT describe the file structure. Please refer to the appropriate XSDs (XML Schema Definition), contained in the Technical Toolkit, for file structure specifications.

**Encryption**- Cryptographic transformation of data (called "plaintext") into a form (called "ciphertext") that conceals the data's original meaning to prevent it from being known or used. If the transformation is reversible, the corresponding reversal process is called "decryption", which is a transformation that restores encrypted data to its original state.

**Extensible Markup Language (XML)**- XML is a simple, very flexible, text format derived from SGML (ISO 8879). Originally designed to meet the challenges of large-scale electronic publishing, XML is also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere.

**File Transfer Protocol (FTP)** - A TCP/IP protocol specifying the transfer of text or binary files across the network.

**HyperText Transfer Protocol (HTTP)** - The protocol in the Internet Protocol (IP) family used to transport hypertext documents across an internet.

**HyperText Transfer Protocol / Secure (HTTPS)** - When used in the first part of a URL (the part that precedes the colon and specifies an access scheme or protocol), this term specifies the use of HTTP enhanced by a **security** mechanism, which is usually SSL.

**Public Key** – The publicly-disclosed component of a pair of cryptographic keys used for asymmetric cryptography

**Response File** – The file returned to External Business Partners that indicates the success or failure of the transactions submitted to CalPERS via File Transfer Protocol (FTP)

**Sample XML** – A file containing an example of XML for a particular file to demonstrate the XML content and format of the file.

**Secure File Transfer Protocol (SFTP)** – A communications protocol used to transfer files without compromise of data. Secure FTP provides extra security by encrypting the files before transmission. It encrypts both the commands and the data, preventing passwords and sensitive information from being transmitted in clear text over the network.

**Simple Object Access Protocol (SOAP)**- The formal set of conventions governing the format and processing rules of a SOAP message. These conventions include the interactions among SOAP nodes generating and accepting SOAP messages for the purpose of exchanging information along a SOAP message path.

**Validation File** – A file specific to a given transaction set describing the error codes and error messages that are generated for each data element validation performed.

**Web Service-** A software system designed to support interoperable machine-to-machine interaction over a network.

**XML Schema** - A schema is a way to describe and validate data in an XML environment. A schema is a model for describing the structure of information. XML Schema (XSD) is a recommendation of the W3C.

## 2. INSTRUCTIONS FOR DOWNLOAD

The [DAV's Technical Toolkit](#) is available in the PERT area of CalPERS On-Line. Clicking on the link embedded in "DAV's Technical Toolkit" above will take you directly to the page where you can download the Toolkit.

The Technical Toolkit consists of several documents necessary for building XML files for submitting deductions to CalPERS for processing. For ease of downloading and to preserve the format of the schema files during download, the contents of the Technical Toolkit are contained in a Zip file.

Instructions for downloading the Zip file are on the page where the Zip file resides. The WinZip program is required to extract the contents from the file. WinZip is a file compression utility that allows several files to be compressed and contained within a single file. WinZip can be obtained online at [WinZip's Web Page](#).

Once the documents have been downloaded and extracted, the Technical Team responsible for building the XML files, to be submitted to CalPERS, will use them to define, build and validate the XML.

### 3. TOOLKIT CONTENTS

The following table outlines the content of the Technical Toolkit and identifies which files included in the toolkit are relevant to Direct Authorization Vendors based on their contracting relationship with CalPERS

Technical Toolkit Contents for Direct Authorization Vendors	
File Name	Notes
<b>Data Element Definitions and Schema Docs</b>	
DADeductionRequest.pdf	
Schema documentation for DADeductionRequest.pdf	Initial Release
DADeductionsResponse.pdf	
Schema documentation for DADeductionsResponse.pdf	Initial Release
DeductionRegister.pdf	
Schema documentation for DeductionRegisterForVendorsV1.pdf	Initial Release
DA Deduction Validation.pdf	Initial Release
Deduction Register Report Specifications	Initial Release
<b>Sample XML &amp; CSV</b>	
Sample DADeductionRequest.xml	Not available at this time
Sample DA Deduction Register Report.csv	Not available at this time
<b>XML Schemas</b>	
DADeductionRequestV1.xsd	
DADeductionsResponseV1.xsd	
DeductionRegisterForVendorsV1.xsd	
CommonUtilitiesV1.xsd	
SoapEnvelope.xsd	
<b>Documentation</b>	
CalPERS ID File Exchange	
Encryption Decryption External User Requirements.pdf	
Overview of Documents.pdf	
DAV README - Technical Toolkit.txt	

Table 3.0



### 3.1. Deduction Submission, Deduction Response and Deduction Register File Data Element Descriptions

The Data Element Description artifacts are documents that define the Data Element field names, descriptions, type, R/O/C (Required/Optional/Conditional) and length. Each element in each file is numbered for reference and elements that are logically related are grouped together, under a group heading. These documents do not represent the order or relationship of Data Elements within these files.

FTP reporters will receive a response file from CalPERS indicating the success or failure of each submitted transaction. The formats for these files detail the data elements included, the requirements for inclusion and the element definitions. A DA Deduction Validation document is included in the Toolkit to provide details of data validations, error and error codes.

The Deduction Register is available via FTP and will be in XML format. It may also be accessed online and downloaded as a comma separated values (.csv) file. There is a Deduction Register Report document which provides the specifications of the report.

Each Data Element Description artifact begins with an introduction. The introduction describes the purpose of the document, provides definitions of the data contained within and also included are Web sites where further information can be found on XML, SOAP and related technologies.

The Data Element “Field” column provides the formal name of the element. The “Description” column defines the element, provides an explanation of its use and notes under what conditions the data element is required where appropriate.

The column R/C/O indicates if the element is Required, Conditional or Optional. The data type, field values and max length provide the format rules for the element.

The Data Type column indicates the type of data that is permitted in the Data Element.

The Field Values column lists the valid field values or format allowed in the Data Element.

The Length column lists the maximum number of characters that the Data Element can contain.

### 3.2. Deduction Submission, Response and Register File Schemas

For FTP and File Upload, the DeductionRequest.xml file will require conformance to the schema which defines the structure of the file. The **File Cross Reference to Schema** table (Table 3.4) describes the relationship between the files provided, their schemas and the definition of each file/schema combination.

After processing a file submitted to CalPERS via FTP, CalPERS will generate a response file. The response files CalPERS sends to Direct Authorization Vendors will be in XML format. The schema for that XML format is included so that the DAVs can build a process to retrieve and process the response file.

The Schema file names and the files they correspond with are shown in Table 3.4 below. There is also a graphical overview of the XML files and the Schema relationships shown in Appendix 4.3.

### **3.3. Deduction Response File**

The Deduction Response file is a validation file associated with the Deduction Submission file and provides information about errors that might be generated during processing of the records in the submission file. For each element, the validation document will provide a description of the validation being performed on the data element, the error code, error severity and error message that is generated when that validation on the individual data element fails.

### **3.4. Common Utilities Schema**

The Common Utilities Schema is common across all files transmitted inbound and outbound using FTP or File Upload. This Schema file defines all the common types that are found across all the XML files and their respective Schemas. This Schema defines the rules that indicate what kind of data can be contained in a common data element, the data model relationship of the common data elements and the format that the data needs to comply with.

### **3.5. SOAP Envelope Schema**

The SOAP Envelope schema is common across all files transmitted inbound and outbound using FTP or File Upload. This Schema files describes the attributes of the XML files. Table 3.4 below indicates the relationship between the schema documents and the reporting file XML.

File Cross Reference to Schema		
File Name	Schema File Name	Definition
Deduction Request File	DADeductionRequestV1.xsd	Schema for the XML file (DAVs to CalPERS) containing Participant Deduction Request Records
Deduction Response File	DADeductionResponseV1.xsd	Schema for the XML file (CalPERS to DAVs) containing Status/Response records to the Participant Deduction Request File processing (FTP only)
Deduction Register File	DeductionRegisterForVendorsV1.xsd	Schema for the XML file (CalPERS to DAVS) containing the Deduction Register output from the monthly benefit roll process.
All	CommonUtilitiesV1.xsd	Schema defining permissible data element formats, conditions, content and error codes for common data elements
All	SoapEnvelope.xsd	Schema defining attributes of XML files

**Table 3.4**

### 3.6. File Transmission Requirements

For Direct Authorization Vendors submitting deductions to CalPERS using XML files, we have included a document detailing the file transmission requirements with respect to encrypting/decrypting files submitted/retrieved using FTP, a description of the schema files (XSD) and how they relate to the structure of the files transmitted.

#### 3.6.1 FTP

The files transmitted to myCalPERS contain sensitive information and when using FTP, these files must be encrypted. The encrypted file is transmitted using sFTP.

Response files delivered as acknowledgements of FTP file processing will be in XML format and encrypted.

Each Direct Authorization Vendor will have a logon and password into a specific directory structure for placing their inbound files and retrieving their outbound files.

Direct Authorization Vendors will use CalPERS public key to encrypt their files and will use their own private key to “sign” the file. Once CalPERS receives the file, we will use the Direct Authorization Vendors Public Key to verify the signature and use CalPERS private key to decrypt the file.

Once testing of the file transmission process begins, CalPERS will assign technical resources to validate the test files submitted and provide guidance to Direct Authorization Vendors for troubleshooting.

Direct Authorization Vendors will need to have completed training so that they are familiar with the test system and steps to log on, review data, and use the staging area to correct errors and submit records for reprocessing within the my|CalPERS system and by submitting a new or adjustment file.

A flow of the FTP transmission process is shown in Appendix 4.2.

### **3.6.2 File Upload**

my|CalPERS is accessed via secure HTTP (HTTPS), so file encryption is not required when submitting files using File Upload.

Direct Authorization Vendors will complete training so that they are familiar with the test system and steps to log on, upload a file, review data, and use the staging area to correct errors and submit records for reprocessing.

Once testing of the file upload process begins, CalPERS will assign technical resources to validate the test files submitted and provide guidance to Direct Authorization Vendors for troubleshooting.

A process flow of the File Upload process is shown in Appendix 4.1.

### **3.7. CalPERS ID Conversion**

Test CalPERS IDs will be provided to Direct Authorization Vendors to utilize in testing the XML file interface and for training purposes. The production CalPERS IDs will be provided prior to go-live so the Direct Authorization Vendors have time to update their systems in time for interim deduction reporting.

A unique CalPERS ID will be created for each Sponsor, Carrier and Third Party Administrator to identify the organization. Each retiree and survivor will have a unique Participant ID. The program that each retiree receives benefits from will have a identifying code. These unique CalPERS IDs and retiree program codes will be provided in an encrypted CD mailed to each Deduction Processor and Sponsor as appropriate.

### **3.7.1 CalPERS ID Download Definition**

This document specifies each data element that will be included in the CalPERS ID download file. The definition of each element and its beginning and ending position in the file will be identified.

### **3.7.2 CalPERS ID Download Instructions**

This instruction set will provide Direct Authorization Vendors with instructions on how to download and work with the CalPERS ID records contained in the file.

### **3.7.3 CalPERS ID Download Sample**

This CSV file is a sample of the CalPERS ID download file.

## **3.8. Technical Support**

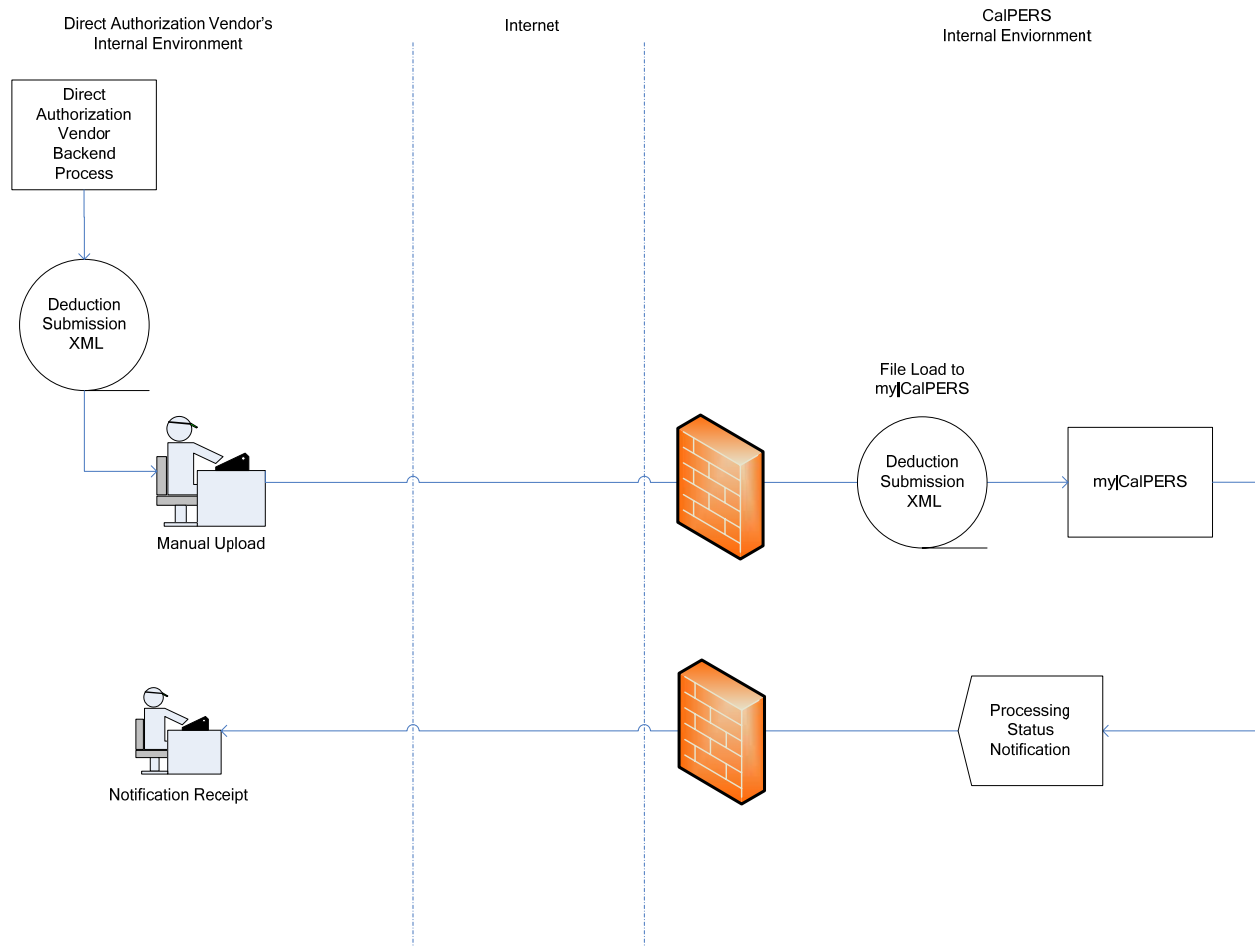
Testing for File Upload and FTP reporting will begin in late 2009. CalPERS will provide test environments so that Direct Authorization Vendors can validate their file structure, conformance to the schema definitions and validate that data contained in the file meets the business rules requirements of the new system.

During the testing process, CalPERS will have Technical Support available to assist with testing issues and facilitating the test process. More information on the testing schedule and how to get support during testing will become available before the test phase actually starts.

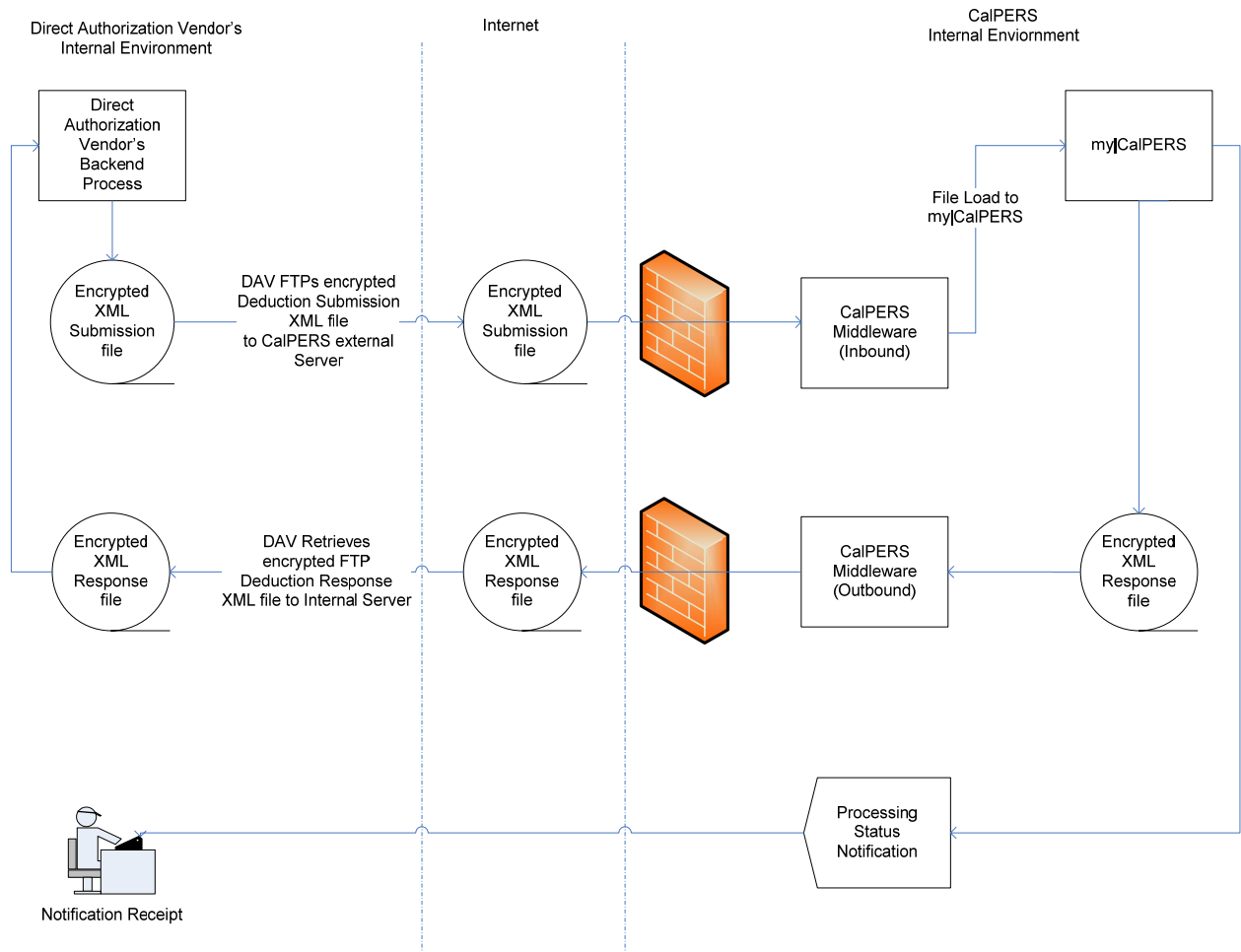
There are many resources available online to help developers with understanding XML and XML Development Tools, Schemas and related topics. A list of Web pages developers may find useful is included in Appendix 4.4

## 4. APPENDICES

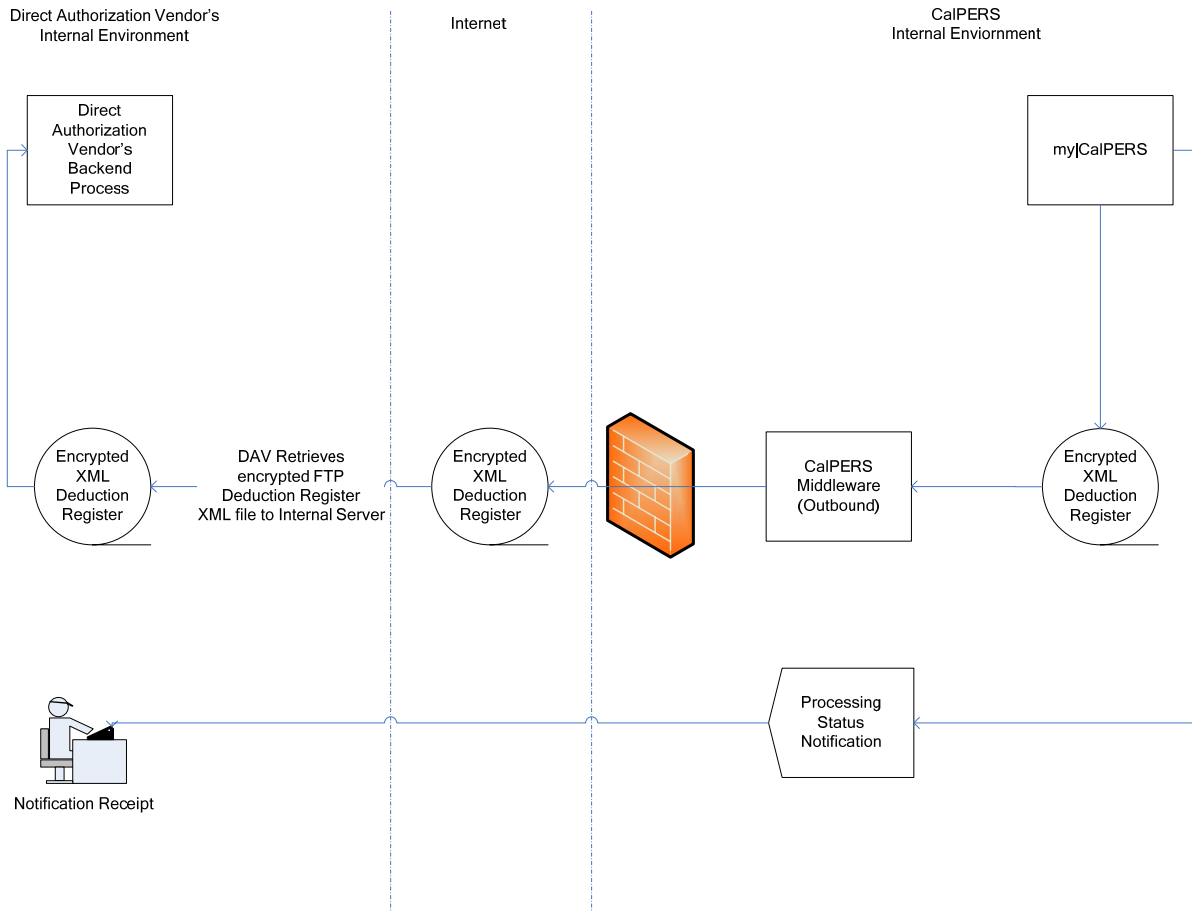
### 4.1. File Upload Overview



## 4.2. FTP File Submission Overview



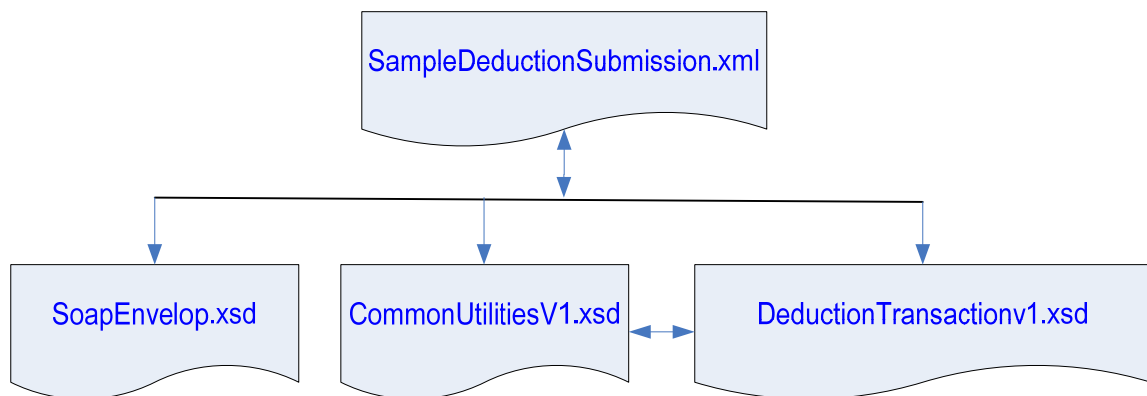
### 4.3. FTP Deduction Register Overview





#### 4.4. File Schema Relationship Overview

This graphic demonstrates how the Soap Envelope and Common Utilities Schemas relate to the XML file created for Deduction Submission.



## 4.5. Reference Material

Table 4.4 references technical information related to XML development tools that may be of some help in determining the technology and design you may choose to work with. Many of the links in this table is also included in the introductory pages of the Data Element Description documents.

ToolKit / Information	Location
Java Apache AXIS	<a href="http://xml.apache.org/axis">http://xml.apache.org/axis</a>
Python Web Services	<a href="http://Pywebsvcs.sourceforge.net">http://Pywebsvcs.sourceforge.net</a>
Perl SOAP	<a href="http://www.soaplite.com">http://www.soaplite.com</a>
PHP NuSOAP	<a href="http://www.sourceforge.net/projects/nusoap/">http://www.sourceforge.net/projects/nusoap/</a>
XML	<a href="http://www.xml.org/">http://www.xml.org/</a>
Microsoft Windows Communication Foundation (WCF) – search by “Building Clients”	<a href="http://msdn.microsoft.com/en-us/netframework/aa663324.aspx">http://msdn.microsoft.com/en-us/netframework/aa663324.aspx</a>
C++	<a href="http://www.sqldata.com/SoapClient/SoapClient30.htm">http://www.sqldata.com/SoapClient/SoapClient30.htm</a>
World Wide Web Consortium (W3C) Working Group on Encryption/decryption	<a href="http://www.w3.org/Encryption/2001/">http://www.w3.org/Encryption/2001/</a>

**Table 4.4**